THE HELMINTHOLOGICAL SOCIETY OF WASHINGTON

THIRTIETH TO THIRTY-EIGHTH MEETINGS, 1916-1919

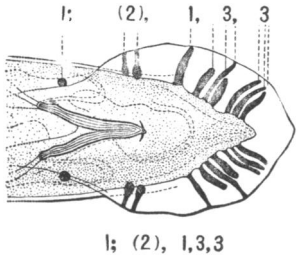
The thirtieth to the thirty-seventh meetings were held at intervals during the years 1916 to 1918. The following includes a few of the papers and notes presented, most of those not reported having been already published or seeming to be no longer of special parasitological interest.

At the thirtieth meeting, March 3, 1916, Doctor Cobb was elected president, and Mr. Crawley secretary.

At the thirty-second meeting, May 12, 1916, Doctor Cobb presented the following note:

BURSAL FORMULA FOR RHABDITIS

As the bursa in this genus is symmetrical, only the papillae and ribs on one side of the bursa are considered, and these are represented by rather arbitrary designations grouped in a formula. These organs are designated according to their proximity to each other and not according to their anatomical and physiological characters. The papillae and ribs are considered as a single longitudinal series, and each group in the series is indicated by a digit representing the number of ribs or papillae in the group. They are regarded as either anal, pre-anal, or post-anal, according as they are opposite to, in front of, or behind the anus. In the formula the anus is included in the parentheses; all papillae approximately opposite the anus are included in the parentheses, the pre-anal papillae are placed in front, and the post-anal papillae after the parentheses. The longitudinal spaces or distances separating the groups of papillae and ribs are



Tail end of a male *Rhabditis*, showing spicula, anal opening, bursa and ribs of the bursa. The ribs of the bursa are shown black. The grouping of the ribs is indicated by the figures above; the corresponding formula as it is to be printed, is shown below the bursa.

indicated by commas and semicolons, the comma representing a short distance, the semicolon a long distance. In some cases before and after the parentheses the punctuation mark may be omitted, thus indicating that the ribs or papillae are even nearer to the anus than in those cases where the separation is indicated by a comma or semicolon. A blank space in the type after the comma, or after the semicolon, indicates a longer distance than is indicated by the comma alone or by the semicolon alone. By these simple means it is easily possible with ordinary type to indicate in a compact formula with considerable accuracy the grouping and latitude of these various elements of the bursa. A glance at the adjacent illustration and formula will make the matter quite clear.

At the thirty-fourth meeting, December 21, 1916, Doctor Stiles gave an account of an investigation made by him and Doctor A. D. Weakley, having for its object to ascertain what connection *Endamoeba gingivalis* has with pyorrhoea alveolaris or Riggs' disease. The study was made on the inmates of the Government Hospital for the Insane, Washington, D. C.

Tests were made with emetin, injected hypodermically daily for six days. In 27 cases, all having endamoeba, the drug was given from July 24 to 31. On

September 22 examinations were made in 25 of these cases with the following results: Marked improvement, 3 cases; slight improvement, 8 cases; no improvement, 14 cases.

The above refers to the conditions as found in the mouth. With regard to the effects on the parasite, 12 showed it 4 days after treatment; 6 showed it 10 days after treatment; 4 showed it 31 days after treatment; 2 showed it 59 days after treatment. In one typical case of Riggs' disease, the amoeba was not present.

The conclusions are to the effect that Riggs' disease is not due to the amoeba and that the amoeba is not always destroyed by emetin.

At the thirty-fifth meeting, January 19, 1917, following a discussion by Doctor Hadwen of investigations on reactions of animals to parenteral injections of juices secured by crushing the bodies of parasites, the results of which have been published elsewhere, Doctor Ransom presented the following note:

REACTIONS FOLLOWING INJECTION OF PARASITE MATERIAL

Experiments have been carried out on the effects of injecting into animals material obtained from various species of metazoan parasites, such as body fluids and aqueous extracts or suspensions of their tissues, either fresh or dried and pulverized. These experiments were suggested by the recent work of Hadwen, of the Canadian Department of Agriculture. In the experiments the host animals used were cattle, horses, sheep, hogs, dogs, cats, rabbits, rats, guinea-pigs, turkeys and chickens, and the parasites included nematodes and tapeworms of various species, ticks, lice, warbles and bots. Few experiments were made on the ophthalmic and intradermal reactions, and the injections in most cases were given subcutaneously, occasionally intravenously. The conclusions reached in some respects are slightly different from those first expressed by Hadwen. Some of the more important are as follows:

Reactions of an anaphylactic type may be produced in cattle, sheep and hogs by single injections of antigens prepared from various metazoan animal parasites.

In some cases the reaction may possibly be specific and dependent upon the existence of infection with the species of parasite from which the antigen is obtained.

In other cases there is no relation between the reaction and the presence or absence of parasites of the species from which the antigen is obtained, and animals may react to parasites of species with which they are not liable to infestation.

Sheep are very susceptible to injections of crushed material, fluids, or extracts from certain metazoan parasites, irrespective of the presence or infestation with these parasites, and small quantities, which have no apparent effect upon guinea-pigs and rabbits when injected intraperitoneally or subcutaneously, when injected subcutaneously into sheep produce severe reactions, frequently terminating in death.

Sheep may respond repeatedly to subcutaneous injections, at intervals of a few days, of material from the same species of parasite, so that the reaction in sheep apparently differs from the ordinary anaphylactic reaction not only in the fact that a sensitizing injection is not required, but in that sheep recovering from one reaction are not thereafter for a considerable period of time insusceptible to further injections.

It is believed that investigations in the field opened up by Hadwen's work will be found to have an important bearing upon the many problems relating to the phenomena of anaphylaxis, and as Hadwen's reaction (that is, the response of animals to antigens prepared from metazoan parasites) in some cases appears to be specific, it may prove of practical utility in diagnosis.

At the thirty-sixth meeting, October 26, 1917, Doctor Ransom was elected president, Mr. Crawley continuing in office as secretary.

Doctor Stiles presented the following note:

A SECOND CASE OF GONGYLONEMA IN MAN

Birge of the Florida State Board of Health has recently seen a case of Gongylonema in a white girl. The case is similar to that recently reported by H. B. Ward. The worm may be either *G. pulchrum* or *G. scutatum.*

The thirty-eighth meeting was held at the residence of Doctor Hall, October 18, 1919. Doctor Ransom was reelected president and Doctor Hall was elected secretary.

Doctor Cobb presented the following note accompanied by a demonstration of the doubly refractive cell inclusions in the intestinal cells of a nematode:

THE USE OF THE POLARISCOPE IN DETERMINING THE CHARACTER OF CELL INCLUSIONS IN NEMAS

In a former paper (J. Parasitol., 1: 40-41) read before this society, attention was called to the presence of doubly refractive bodies in the intestinal cells of *Rhabditis monhystera* Bütschli, the name rhabditin being given to the material of which these bodies are composed. In connection with the importation of plants and soil in order to exclude harmful species of nemas that are likely to be present in the small quantities of soil sometimes adhering to the roots of imported plants or in soil brought in as ship ballast, it is important that some broad lines of differentiation be found between harmful and harmless or beneficial nemas, particularly since the imported nemas are commonly of unknown species with unknown food habits. With reference to such a distinction, the granules of the intestinal cells are of interest. As, broadly speaking, the granules are related to the character of the food, the nemas of the two large groups may be expected to show granules of two large general groups. Fortunately, in some nemas food habits are well known. An examination of the intestinal granules of herbivorous nemas and of the less common carnivorous nemas indicates that carnivorous forms that show birefringent granules are approximately twice as numerous as those that do not, whereas the reverse is true for herbivorous forms. Aside from calcium sulphate and rhabditin, five or six kinds of doubly refractive granules have been found in the course of an examination of almost two hundred species of nemas, belonging to about forty genera, and these granules fall into two groups. One of these groups comprises granules that are evidently stored food material, and the other granules that are evidently elimination material; one is anabolic and the other katabolic. The granules of the first group are abundant when present, sometimes comprising more than 25 per cent. of the cell volume. Further study will be made in the hope of distinguishing between herbivorous and carnivorous nemas on the basis of the granules.

Doctor Cobb also presented a note on an adaptation of the polariscope to immersion lenses. In this adaptation the nickel prism is mounted very close to the back lens of the objective. The condenser of the microscope is replaced by an immersion lens, and the object to be examined is mounted between two cover glasses. This apparatus is of great value in studying the cell inclusions in nemas, many of which are on the limits of visibility.

Doctor Ransom presented the following note:

GAPEWORM IN TURKEYS AND CHICKENS

Investigations have shown that the gapeworm of poultry (*Syngamus trachealis*) is found commonly parasitic in turkeys. Feeding experiments show that young chickens readily become infected, but that older birds are comparatively immune, and as a rule cannot be infected by feeding material which is infectious for chicks. At least the worms rarely develop to the mature stage in adult chickens, and when they do succeed in reaching maturity they often

appear to remain in the trachea but a short time, and the chickens soon become free from infestation. On the other hand, adult turkeys can be easily infected as well as young poults, and apparently they can harbor the parasites during long periods. The results of experiments on chickens and turkeys have been confirmed by postmortem observations on birds slaughtered for market purposes. Adult chickens are habitually found free from gapeworm, as shown by an examination of 635 chickens from Center Market, Washington, D. C., all of which were negative. Adult turkeys, however, are commonly found infested. Out of 679 turkeys examined at Center Market, 153, or 22.5 per cent., were infested with gapeworm.

From the foregoing it appears that adult chickens are comparatively of little importance as gapeworm carriers. Adult turkeys, on the contrary, are of major importance as carriers of gapeworms, although they are not likely to be suspected by the poultry raiser as spreaders of infection, since they commonly show no outward symptoms of disease. Turkeys, therefore, must be given consideration as reservoirs of infection as well as the soil in which, according to the results of experiments upon the longevity of gapeworm larvae, infection may persist under favorable conditions for over a year.

Young gapeworms may be found in the lungs within a week after feeding infective material, and the two sexes become coupled in the lungs while still very small. Later they migrate to the trachea, and oviposition begins within two weeks after the feeding of infective material. Gapeworm larvae in guinea-pigs will migrate to the lungs and undergo an incomplete development.

MAURICE C. HALL, Secretary.